**Using Data to Identify and Address CTE Opportunity Gaps**

*Participant Workbook*

# Introduction

The promise of Career Technical Education (CTE) is to provide opportunities for each learner to follow their passion and achieve career goals and future economic success. While high-quality CTE programs of study across the country are delivering positive outcomes for learners, the reality is that not all learners have access to these programs. The Strengthening Career and Technical Education for the 21st Century Act (Perkins V) elevated the importance of access and equity and has challenged states and local recipients to prioritize this work to address identified gaps.

Aligning with Advance CTE’s statement on Equity in Career Technical Education (see text box), this workshop is designed to facilitate a process with teams from local school districts and/or postsecondary institutions to examine their CTE enrollment data in order to identify and address opportunity gaps. Through a facilitated inquiry-based approach, participants will identify and prioritize root causes, explore evidence-based intervention strategies and propose specific action steps to address these gaps. This workshop is geared to launch data-driven deep discussions within the local community, including those currently being underserved by CTE, in order to provide insight and propel meaningful action to enhance access to CTE opportunities for each learner.

This participant workbook includes guidance, worksheets and exercises to accompany the workshop and is meant to be completed concurrently.

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# Objectives:

At the conclusion of this workshop, participants will be able to:

* Discuss why equity is important in CTE and understand common equity and access challenges in CTE
* Use a proportionality gap analysis with CTE enrollment data to identify opportunity gaps
* Leverage different tools and techniques to investigate opportunity gaps and identify root causes
* Draw on evidence-based implementation strategies to address root causes and barriers to access
* Identify action steps and prioritize areas where additional stakeholder input is needed

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| Advance CTE’s Statement on Equity in CTE Historically, CTE—once called vocational education—was an alternative educational option for learners who were considered non-college bound. As a result, a disproportionate number of low-income learners, learners of color, learners with disabilities, female learners and other historically marginalized populations were “tracked” into terminal vocational programs that denied their full potential and left them with limited opportunity.  Today, the quality of CTE has vastly improved, making it a preferred path for many secondary and postsecondary learners. Yet even today, many learners do not have access to high-quality programs of study in their communities. The same systemic barriers that contributed to tracking in the 20th century—implicit and overt biases, resource inequity, school segregation—result in inequities today.  State leaders have a critical responsibility to ensure each learner has opportunities for career success and is supported in identifying and realizing his or her goals. State leaders must identify and dismantle historical barriers and construct systems that support each learner in accessing, feeling welcome in, fully participating in and successfully completing a high-quality CTE program of study. This means leveraging data to identify and address equity gaps, building trust with historically marginalized communities, establishing feedback loops to ensure each voice is heard, allocating resources appropriately to expand access to high-quality CTE, and putting measures in place to support each learner to achieve success.  Once the right systems are in place, CTE can be a powerful tool for closing achievement and opportunity gaps. High-quality CTE programs of study can prepare each learner to earn a credential of value that enables him or her to achieve economic and social mobility, obtain employment in a career of choice with family-sustaining wages, and access opportunities for advancement and lifelong learning. It is only through such an intentional focus on equity that states will be able to truly put learner success first.[[1]](#endnote-2) |

# Section 1: Orientation to Equity in CTE

## Diversity, Equity and Inclusion

Let’s start with some key terms and definitions. Use the table below to write the definitions for the following terms in your own words. What does “diversity” mean to you? What about “equity”? “Inclusion”?

|  |  |
| --- | --- |
| **How would you define the following terms?** | |
| *Diversity* |  |
| *Equity* |  |
| *Inclusion* |  |

NOTES:

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## Key Terms and Definitions

The following terms and definitions will be used throughout the workshop. Refer to this glossary for an understanding of what they mean and how they are used in the context of the workshop.

* **Access** –Access refers to ways in which educational institutions and policies ensure that learners have equal and equitable opportunities to participate in and take full advantage of their education. Access depends on factors such as geography, resources, academic preparation and awareness.
* **Diversity** – A wide range of qualities and attributes within a person, group or community. When we celebrate diversity, communities and workplaces become richer, drawing upon the variety of experiences, perspectives and skills that people can contribute.[[2]](#endnote-3)
* **Equality** – An approach to distributing resources and opportunities proportionally without consideration of differences in needs.
* **Equity** – Fairness; giving everyone what they need to be successful. Acknowledging everyone’s unique situation and addressing historic and current-day systemic barriers. (Contrast with equality, where each individual is treated the same).[[3]](#endnote-4)
* **Implicit Bias** – Attitudes or stereotypes that affect our understanding, actions and decisions in an unconscious manner. These biases, which encompass both favorable and unfavorable assessments, are activated involuntarily and without an individual’s awareness or intentional control.[[4]](#endnote-5)
* **Inclusion** – Acknowledging and valuing people’s differences so as to enrich or shift social planning, decision making and quality of life for everyone. In an inclusive society, we all have a sense of belonging, acceptance and recognition as valued and contributing members of society.[[5]](#endnote-6)
* **Nontraditional fields** – Occupations or fields of work for which individuals from one gender comprise less than 25 percent of individuals employed in such occupation or field of work.
* **Opportunity Gap** – An observable disparity in access and/or outcomes for a specific subgroup or special population that results from systemic inequities, implicit biases and outright discrimination on account of their identity.
* **Proportionality Gap Analysis** – An analysis that reveals whether or not the individuals in a specific program are proportionally representative of the demographics of their broader community.
* **Root Cause Analysis** – A method of problem solving designed to uncover the deepest root(s) and most basic reasons for identified concerns.[[6]](#endnote-7)
* **Special Populations** – There are nine recognized special populations in Perkins V:(A) individuals with disabilities; (B) individuals from economically disadvantaged families, including low-income youth and adults; (C) individuals preparing for non-traditional fields; (D) single parents, including single pregnant women; (E) out-of-workforce individuals; (F) English learners ; (G) individuals experiencing homelessness; (H) youth who are in, or have aged out of, the foster care system; and (I) youth with a parent who is a member of the armed forces and is on active duty.
* **Subgroups** – A population of individuals with a common identity, often used when disaggregated and analyzing data. CTE data is often disaggregated by the following subgroups: economically disadvantaged learners; learners with disabilities; English learners; African-American learners; American Indian/Alaska Native learners; Asian learners; Native Hawaiian/Other Pacific Islander learners; Hispanic or Latino learners; White learners.

# Section 2: Conducting a Proportionality Gap Analysis

## What is a Proportionality Gap Analysis?

One indication of an equitable CTE program is parity between the learners in the program and the broader population. If there are no barriers to access, we would expect that the learners enrolled in CTE programs reflect the demographics of the learners in the school, district, college or broader community.

Conducting a proportionality gap analysis reveals whether or not CTE learners are proportionally representative of their community. This can also reveal the programs with the largest disparities and help prioritize interventions. The diagram below illustrates how to conduct this analysis.

While this example only looks at CTE enrollment as a whole, this analysis can and should be conducted at the program level as well. Oftentimes, opportunity gaps across programs can be masked by looking at aggregated data. Program-level data can help you understand whether there are disparities in access to programs aligned to high-wage, in-demand occupations or if learners are accessing programs that are non-traditional for their gender.

|  |  |
| --- | --- |
| **Step** | **Example** |
| 1) Calculate the overall proportion of learners in each subgroup or special population in the school, district, college or community | There are 500 9-12 grade learners enrolled at Heartland Public School District. Out of those learners, 50 have an Individualized Education Plan and are categorized as learners with disabilities. Therefore:  ***Interpretation:*** In total, 10% of 9-12 grade learners at Heartland School District are learners with disabilities. |
| 2) Calculate the proportion of CTE learners in each subgroup/ special population | Heartland Public School District has three CTE programs of study: Welding, Allied Health and Culinary Arts. There are 20 learners in each program and there is no overlap in enrollment between the programs (so these are nonduplicated counts). Out of the 60 total CTE learners, three are learners with disabilities. Therefore:  ***Interpretation:*** Out of 60 CTE learners in Heartland Public School District, 5% are learners with disabilities. |
| 3) Calculate the different between both percentages to find the percentage point gap | Out of all of the learners at Heartland High School, 10% are learners with disabilities. Out of all the CTE learners at Heartland High School, 5% are learners with disabilities.  percentage points  There is a 5 percentage point gap between the population of enrolled CTE learners with disabilities and the overall population.  ***Interpretation:*** In Heartland Public School District, learners with disabilities are *under-represented* in CTE by 5 percentage points. |

## 

## Example: Heartland Public School District

The following graphs represent fictitious data for Heartland Public Schools.

**Interpretation:** Female learners are underrepresented by 2 percentage points in CTE compared to all 9-12 learners in Heartland Public Schools.

**Interpretation:** Latinx learners are underrepresented in CTE by 8 percentage points compared to all 9-12 learners in Heartland Public Schools. Black/ African American learners are also underrepresented by 3 percentage points, and White learners are overrepresented by 10 percentage points.

**Interpretation:** Learners with disabilities are overrepresented in CTE by 6 percentage points compared to all 9-12 learners in Heartland Public Schools. Economically disadvantaged learners are also overrepresented by 12 percentage points and English learners are underrepresented by 4 percentage points.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program Name** | **Career Cluster** | **Program Popularity** | **F** | **M** | **Asian** | **Latinx** | **Black** | **White** | **Dis** | **ED** | **EL** |
| Accounting Technology/Technician & Bookkeeping | Finance | 4% | -4% | 4% | -8% | -2% | -19% | 29% | -9% | 17% | -5% |
| Administrative Assistant and Secretarial Science, General | Business, Management & Administration | 2% | 49% | -49% | -8% | 4% | 9% | -6% | 57% | 55% | -5% |
| Applied Horticulture/Horticulture Operations, General | Agriculture, Food, and Natural Resources | 2% | 10% | -16% | -8% | 7% | 8% | -7% | 61% | 28% | -2% |
| Architectural Technology / Technician | Architecture and Construction | 3% | -20% | 20% | 8% | -27% | -13% | 47% | -9% | 2% | -5% |
| Automobile/Automotive Mechanics Technology/Technician | Transportation, Distribution & Logistics | 4% | -38% | 38% | -1% | -18% | 21% | -2% | -2% | -2% | -5% |
| Business Administration/Management | Business, Management & Administration | 4% | 9% | -9% | -1% | -15% | 8% | 8% | -11% | 3% | -5% |
| Carpentry/Carpenter | Architecture and Construction | 4% | -35% | 35% | -6% | -20% | 7% | 3% | 12% | -1% | -5% |
| Child Care Provider/Assistant | Human Services | 4% | 49% | -49% | -6% | 1% | -5% | 10% | 41% | 39% | -4% |
| Child Development | Education & Training | 3% | 45% | -45% | -5% | 9% | 7% | -11% | 35% | 27% | -5% |
| Computer Programming/Programmer, General | Information Technology | 5% | -36% | 36% | 10% | -19% | -18% | 27% | -14% | -9% | -5% |
| Cosmetology/Cosmetologist, General | Human Services | 5% | 46% | -46% | -8% | -3% | -4% | 15% | 16% | 13% | -4% |
| Criminal Justice/Police Science | Law & Public Safety | 4% | -38% | 38% | -8% | -16% | 8% | 15% | -11% | 13% | -4% |
| Culinary Arts/Chef Training | Hospitality & Tourism | 4% | -5% | 5% | -6% | 9% | -5% | -1% | -7% | 14% | -5% |
| Digital Communications & Media/Multimedia | Arts, Audio/Video Technology & Communications | 5% | -4% | 4% | -2% | -11% | -16% | 32% | -6% | 6% | -5% |
| Engineering, General | STEM | 5% | -23% | 23% | 20% | -10% | -17% | 22% | -13% | -4% | -5% |
| Food Preparation/Professional Cooking/Kitchen Assistant | Hospitality & Tourism | 3% | 9% | -9% | -8% | 3% | 2% | 0% | 70% | 38% | -3% |
| Health Services/Allied Health/Health Sciences, General | Health Science | 5% | 25% | -25% | 3% | -18% | -10% | 25% | -11% | 0% | -5% |
| Landscaping & Groundskeeping | Agriculture, Food, and Natural Resources | 2% | -43% | 43% | -8% | 14% | -3% | -12% | 51% | 38% | 3% |
| Logistics, Materials, and Supply Chain Management. | Transportation, Distribution & Logistics | 4% | -14% | 14% | 1% | 2% | -1% | -2% | -2% | 18% | -5% |
| Manufacturing Engineering Technology/Technician | Manufacturing | 5% | -27% | 27% | 24% | -19% | -19% | 14% | -12% | -9% | -5% |
| Mechatronics, Robotics, and Automation Engineering | STEM | 3% | -21% | 21% | 10% | -19% | -1% | 10% | -9% | 31% | -5% |
| Nursing Assistant/Aide and Patient Care Assistant/Aide | Health Science | 4% | 43% | -43% | -6% | 17% | 5% | -16% | 36% | 37% | -4% |
| Radio & TV Broadcasting Technology/Technician | Arts, Audio/Video Technology & Communications | 4% | 5% | -5% | -4% | -16% | 9% | 11% | 2% | -4% | -5% |
| Restaurant/Food Services Management | Hospitality & Tourism | 4% | 0% | 0% | -4% | 10% | -8% | -8% | -9% | 21% | -5% |
| Small Engine Mechanics & Repair Technology/Technician | Transportation, Distribution & Logistics | 1% | -43% | 43% | 1% | -7% | -1% | 7% | 69% | 53% | -5% |
| Web Page, Digital/Multimedia and Information Resources Design | Information Technology | 6% | 1% | -1% | 4% | -13% | -9% | 18% | -10% | 4% | -5% |
| Welding Technology/Welder | Manufacturing | 2% | -48% | 48% | -8% | -9% | 13% | 4% | -3% | 22% | -5% |
|  |  |  | **-2%** | **2%** | **0%** | **-7%** | **-3%** | **10%** | **6%** | **13%** | **-5%** |

**Heartland Public Schools Program Enrollment Heatmap**

**Interpretation:** In the most popular CTE program (Web Page, Digital/ Multimedia and Information Resources Design),Latinx learners are underrepresented by 13 percentage points, White learners are overrepresented by 18 percentage points, and learners with disabilities are underrepresented by 10 percentage points.

### Identify at least one opportunity gap based on the Heartland Public Schools Heatmap

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### Are there any other observations you note based on this data?

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# Section 3: Reviewing Your Local Data

## Interpreting your Data

Refer to your **opportunity gap analysis dashboard** to complete this activity. To help you interpret your data it is important to first gain an understanding of which learners are included in the dashboard. Complete the table below describing the learner populations represented in the data:

|  |  |  |
| --- | --- | --- |
| **Which learner populations are used in your analysis?** | | |
| **Education Level** | **CTE population** | **Comparison population** |
| *Example* | *All CTE concentrators enrolled in CTE programs at Heartland Public Schools* | *All 9-12 grade learners in Heartland Public Schools* |
| *Secondary* |  |  |
| *Postsecondary* |  |  |

There are two components of the opportunity gap analysis dashboard that will aid you in identifying CTE programs or programs of study with notable opportunity gaps:

**Understanding the Heatmap**

* Cells are highlighted **blue** if the learner subgroup is over-represented by 10 percentage points or more.
* Cells are highlighted **orange** if the learner subgroup is under-represented by 10 percentage points or more.
* Dashboard:The “Dashboard” tab demonstrates how the CTE population compares to the overall population in the school, district, college or community. There are a number of charts and graphs that illustrate the degree to which learners are over- or under-represented in CTE or in specific programs by subgroup and special population. This tab is meant to provide high-level trends and allow you to identify areas for further examination.
* Program Enrollment Heatmap:There are program enrollment tabs for secondary CTE and for postsecondary CTE. These tabs allow you to drill down to the program level to determine whether disparities differ by program area. The heatmap automatically highlights programs with over- or under-represented populations.

## Reviewing Secondary Data

Looking at your opportunity gap analysis dashboard, discuss the following questions:

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| --- |
| **Enrollment in CTE** |
| 1. Overall, to what extent does the demographic makeup of the CTE learner population reflect the demographic makeup of your comparison population? |
|  |
| 2. List the specific subgroups and special populations that are under-represented in CTE overall. |
|  |
| 3. List the specific subgroups and special populations that are over-represented in CTE overall. |
|  |

|  |
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| **Program-Level Data** |
| 1. List the CTE programs or programs of study that have enrollment by learner subgroup and special population that is consistent with the comparison population’s demographics. |
|  |
| 2. List all the CTE programs or programs of study that have one or more subgroups and/or special populations that are under-represented? (list program and subgroup and/or special population). |
|  |
| 3. List all the CTE programs or programs of study that have one or more subgroups and/or special populations that are over-represented? (list program and subgroup and/or special population). |
|  |
| 4. What surprised you about the data? |
|  |
| 5. In what areas do you think you are doing well in serving all learners? |
|  |

## Reviewing Postsecondary Data

Looking at your opportunity gap analysis dashboard, discuss the following questions:

|  |
| --- |
| **Enrollment in CTE** |
| 1. Overall, to what extent does the demographic makeup of the CTE learner population reflect the demographic makeup of your comparison population? |
|  |
| 2. Which specific subgroups and special populations are under-represented in CTE overall? |
|  |
| 3. Which specific subgroups and special populations are over-represented in CTE overall? |
|  |

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| --- |
| **Program Level Data** |
| 1. Which CTE programs or programs of study have enrollment by learner subgroup and special population that is consistent with the comparison population’s demographics? |
|  |
| 2. Which CTE programs or programs of study have one or more subgroups and/or special populations that are under-represented? (list program and subgroup and/or special population) |
|  |
| 3. Which CTE programs or programs of study have one or more subgroups or special populations that are over-represented? |
|  |
| 4. What surprised you about the data? |
|  |
| 5. In what areas do you think you are doing well in serving all learners? |
|  |

# Section 4: Identifying Opportunity Gaps

An **Opportunity Gap** occurs when specific subgroups or special populations of learners have disproportionate access to high-quality learning opportunities or when the environmental conditions are insufficient for specific subgroups of learners or special populations to be successful. These gaps result from systemic, structural and social barriers such as admissions policies, implicit bias, stereotyping or insufficient funding. The first sign of an opportunity gap in CTE is whether learners are disproportionately enrolled in CTE by their subgroup or special population status.

Using the data in your dashboard, identify five opportunity gaps for further examination. Consider the following questions:

**Opportunity Gap Example**

**Who:** Latinx learners

**Direction:** Are underrepresented

**Degree:** By 27 percentage points

**Where and When:** In Architectural Technology program in the 2018-19 school year.

* **Who** is most affected?
* **What** is the direction of the opportunity gap?
* **What is the degree** of the opportunity gap?
* **Where** and **when** does the opportunity gap occur?

*\*\*Do not focus on causes of the opportunity gap — simply use the data to make statements.*

To prioritize your opportunity gaps, consider focusing your data analysis on the following:

* Programs with the most sizable gaps
* The most popular programs
* Programs that don’t have a compromising n-size
* Programs with gaps affecting multiple learner groups
* Gaps that are unexpected and/or not currently being addressed

|  |
| --- |
| Opportunity Gap #1: |
|  |
| Opportunity Gap #2: |
|  |
| Opportunity Gap #3 |
|  |
| Opportunity Gap #4 |
|  |
| Opportunity Gap #5 |
|  |

# Section 5: Brainstorming Root Causes

## Conducting a Root Cause Analysis

A **Root Cause Analysis** (RCA) is a method of problem solving designed to uncover the deepest root(s) and most basic reasons for identified concerns. It is an effective tool to investigate and uncover the cause(s) of a problem rather than treating symptoms of the problem. Following the identification of root causes, strategies can be deployed to shift investments and resources to move to solutions that can have transformative impacts. A root cause analysis induces discussion and reflection with conversations grounded in data. The process includes open and honest deliberations in a safe, collaborative environment to foster examination of data and brainstorm potential causes of the identified opportunity gap.

A systems approach is critical to identify root causes. Systems are composed of an organized array of interdependent and interacting components. While you may start with identifying specific individual parts, as this analysis unfolds you will note how these different parts are interacting. One way to organize this systems approach for the RCA for the opportunity gaps identified is listed below. Some root causes may cross categories and may not seem to fit discretely into a specific category. These categories are merely an organizational tool to help you consider all possible causes through various lens. One important consideration is that a root cause should not be framed as “blaming” a person or group for the cause of the identified gap.

### Root Cause Themes in CTE

* **Culture/Beliefs:** The broader expectations and values in relation to CTE itself and/or to specific learner groups. This is where we may see examples of implicit bias, CTE stigma, and stereotypes about particular groups.
* **Policies/Processes:** State, district and/or institutional policies and procedures that create barriers to access or success in CTE programs. This may include admission requirements, scheduling barriers or funding limitations.
* **Environment:** The geographic and/or socioeconomic factors that impact access and/or prevent learners from realizing their education and career goals. This may include lack of access to equipment, financial barriers and/or transportation.
* **Instruction:** The barriers to teaching and learning in the CTE classroom such as lack of accommodations for learners with disabilities, bias in the curriculum, or insufficient academic preparation prior to entering the CTE program.
* **People:** Includes barriers related to staffing – such as insufficient school counselors or career advisers and shortages of qualified teachers and faculty – or lack of representational diversity in the CTE teacher workforce and among industry partners.

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| **Heartland Public Schools Root Cause Analysis Example**  **Opportunity Gap:** Latinx learners are underrepresented by 27 percentage points in the Architectural Technology Program in the 2018-19 school year.  Possible causes:   * + Lack of awareness of this CTE program among Latinx families (culture)   + Location of this CTE program is not in the communities where the majority of Latinx families reside (environment)   + Recruitment material for this program is only provided in English (policy/process)   + There is only one part-time Latinx teacher in the high school where this program is located (people) |

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| **Individual Brainstorming** |
| *Using the opportunity gap statement assigned to your small group discussion, list as many possible causes for this opportunity gap* |
| **Potential Causes:** |
|  |
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|  |
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## Using a Fishbone Diagram

**A Fishbone Diagram** is a visual way to brainstorm and identify possible causes of a problem by sorting ideas into useful categories. The problem, in our case identified as the “opportunity gap,” is displayed at the head of the fish. Possible causes are listed on the smaller bones under various categories. Team members work collaboratively to brainstorm, and question and consider alternative causes from various perspectives during this exercise. The fishbone diagram can be helpful in identifying causes that might not have been considered by asking questions and digging deeper beyond the surface to better understand systems and underlying processes that may be contributing to and/or causing the identified opportunity gap. There can be more than one root cause identified through this approach.

Below is an example of some of the ideas that began to surface using the Heartland Public School data dashboard to address the specific opportunity gap. After initial brainstorming, the group worked together to organize their ideas into categories to better understand potential causes for this gap. Clarifying questioning, by the individuals in the group, as ideas are posted contribute to the deeper level of understanding of potential causes.

Location of this CTE program is not in the communities where the majority of Latinx families reside

Culture/Beliefs

**Heartland Public Schools Fishbone Diagram**

Policies/ Processes

Environment

People

Latinx learners are underrepresented by 27 percentage points in the Architectural Technology Program in the 2018-19 school year.

Lack of awareness of this CTE program among Latinx families

Recruitment material is only provided in English

There is only one part-time Latinx instructor

## Identifying Root Causes

*There are a number of factors that can result in disparities in enrollment. It is helpful to think of root causes in terms of systems-level barriers. These can include barriers related to culture and beliefs; policies and processes; environment; instruction; or people. Use the diagram below to list out the major root causes you identified through your RCA in your group discussion for the specific opportunity gap.*

Theme 1

Theme 2

Theme 5

Theme 4

Theme 3

Theme 6

Cause 1

Cause 3

Cause 2

Cause 3

Cause 1

Cause 2

Cause 3

Cause 3

Cause 2

Cause 1

Cause 3

Cause 2

Cause 1

Cause 3

Cause 2

Cause 1

Cause 1

Cause 2

**Opportunity Gap Statement**

## Validating Assumptions and Considering Other Input

In completing a root cause analysis, you may also realize that you need more input from others to assist in determining and validating your assumptions. Whom do you need to consult with to get perspective to further explore and/or confirm the accuracy of these assumptions?

|  |  |  |
| --- | --- | --- |
| **Stakeholder Group/Specific Person** | **What do you want to explore?** | **How will you do this?** |
|  |  |  |
|  |  |  |
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You may also have data from your Comprehensive Local Needs Assessment and other sources that can inform and/or validate assumptions. List other data sources to be reviewed along with any specific detail on what you will examine below.

|  |  |
| --- | --- |
| **Other Data Sources** | **Specific information to examine/explore** |
|  |  |
|  |  |
|  |  |
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You may have also uncovered policies that may need to be examined to fully address the identified root cause(s) for this opportunity gap. List these policies and how you will address this below:

|  |  |
| --- | --- |
| **Policies to examine** | **How will this be done?** |
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|  |  |
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# Section 6: Evidence-Based Research

## Understanding Different Levels of Evidence

The next step in developing an equity action plan is to identify impactful strategies that will help you close opportunity gaps. The best place to start is with existing evidence. Learning how other states, districts, colleges and schools addressed similar opportunity gaps helps ensure that your plan of action will lead to the desired outcomes.

When evaluating whether a strategy can effectively close opportunity gaps, practitioners often seek research or evidenced-based practices. These are practices that have some base of evidence – either through rigorous experimental or quasi-experimental studies, or even just early anecdotal evidence.

However, not all strategies have the same base of evidence to support their effectiveness. As practitioners seeking to implement evidence-based strategies, it is important to differentiate levels of evidence before committing to a particular strategy. It also important to note that lack of evidence does not necessarily indicate a strategy is ineffective; however, it could simply mean that the research base has not yet been developed to make a determination as to its effectiveness.

Federal law often requires grant recipients to leverage rigorous evidence to inform budgeting and decision making. The Every Student Succeeds Act (ESSA), which authorizes the federal investment in K-12 education, designates four tiers of evidence: strong, moderate, promising and “under evaluation.”[[7]](#footnote-2)

For this workshop, we use a three-level system to identify evidence-based practices that is based on the breadth of research supporting that particular intervention or strategy.

## Strategies for Closing Opportunity Gaps in CTE

The following table describes root causes and related strategies that have been found to impact learner access to CTE. While most strategies have backing evidence supported by a broad literature review, there are a few strategies that have been demonstrated anecdotally but not rigorously. Additionally, since the research base in CTE is still relatively light, some of these strategies have not been tested specifically among CTE learners.

Levels of evidence are designated as follows:

\*\*\* Level 1 (supported by 1-2 pieces of evidence)

\*\* Level 2 (supported by 3-5 pieces of evidence)

\* Level 3 (supported by 6+ pieces of evidence)

|  |  |
| --- | --- |
| **CULTURE/BELIEFS:** The broader expectations and values in relation to CTE itself and/or to specific learner groups. This is where we may see examples of implicit bias, CTE stigma, and stereotypes about particular groups. | |
| *Lack of awareness about CTE* | Implement online platforms for career exploration and planning\*\*\*  Provide middle school CTE/career exploration curriculum and experiences\*\*  Provide early high school CTE/career exploration curriculum and experiences\*\*  Develop recruitment materials and host recruitment events\*  Require individual academic and career plans\*  Engage key influencers (school counselors, teachers, CTE learners or alumni) to share information about CTE\*  Provide informational materials in multiple languages |
| *CTE stigma* | Engage families in career development\*\*  Use learner and parent ambassadors to address outdated perceptions about CTE\*  Use career exploration and planning platforms and recruitment materials to highlight the benefits of CTE |
| *Implicit bias/stereotypes about particular learner groups* | Implement intergenerational mentoring programs\*\*\*  Provide professional development on implicit bias, stereotype threat, disability awareness and more\*\*\*  Implement peer mentoring programs or peer support groups\*\*  Develop targeted recruitment materials and strategies\*  Partner with media organizations to promote positive representations of diverse learners in different occupations\*  Develop inclusive recruitment materials and strategies that depict diverse learner populations |
| **POLICIES/ PROCESSES:** State, district and/or institutional policies and procedures that create barriers to access or success in CTE programs. This may include admission requirements, scheduling barriers or funding limitations. | |
| *Admissions barriers* | Eliminate admissions requirements  Reserve seats/spaces for targeted learner groups |
| *Scheduling barriers* | Implement career academies or similar cohort-based, interdisciplinary models for high school learners\*\*\*  Schedule CTE courses to maximize access, considering graduation requirements and other requirements for learners with disabilities and English learners\*  Provide courses and services in the evenings and on the weekends |
| *Disciplinary barriers* | Implement school-wide positive behavior interventions and supports at the middle school or high school level\*\*\*  Ensure educators, counselors, administrators and other faculty and staff are trained on using trauma-informed practices to promote a culture of safety and support\*\* |
| *Lack of policies that support diversity* | Develop and enforce nondiscrimination policies\*  Develop and enforce anti-bullying/anti-harassment policies  Use data to monitor enrollment patterns and identify opportunity gaps  Conduct learner surveys or focus groups to evaluate whether programs are inclusive and welcoming for underrepresented populations |
| *Lack of systemic counseling and advisement* | Implement online platforms for career exploration and planning\*\*\*  Implement dropout prevention/early warning systems\*\*  Provide proactive counseling/advising/career coaching\*  Require individual academic and career plans\*  Provide professional development for counselors/advisers on CTE education and employment opportunities and labor market needs |
| *Siloed departments and services* | Implement career academies or similar cohort-based, interdisciplinary models\*\*\*  Implement postsecondary guided/accelerated pathways through program maps, intensive advising and early warning systems\*\*\*  Implement sector-specific training programs scaffolded by career advisement, job placement and financial/tangible supports, among other support services\*\*\*  Structure postsecondary education to enable early entry into CTE programs/pathways\* |
| **ENVIRONMENT:** The geographic and/or socioeconomic factors that impact access and/or prevent learners from realizing their education and career goals. This may include lack of access to equipment, financial barriers and/or transportation. | |
| *Lack of access to relevant facilities and equipment* | Provide equipment that is inclusive for learners with disabilities and various genders (differently sized protective equipment, etc.)\*  Share facilities and equipment with other learning providers or industry partners  Enact a one-to-one technology policy to scale up virtual or remote learning opportunities  Provide facilities that are inclusive for learners with disabilities and various genders |
| *Lack of access to qualified CTE instructors and industry partners* | Develop “grow your own” programs in the Education and Training Career Cluster®\*  Develop induction/mentoring programs for new instructors that build industry and/or pedagogical knowledge and skills\*  Provide virtual access to industry representatives, including through simulated work-based learning\*  Establish formal dual or concurrent enrollment partnerships between secondary and postsecondary institutions to give high school learners access to postsecondary instruction\*  Provide externships for teachers and faculty that build industry knowledge and skills  Provide virtual access to qualified instructors  Enable co-teaching/team teaching that pairs instructors with differing levels of experience/qualifications or pairs instructors with industry experts |
| *Financial barriers* | Provide free/low-cost opportunities to earn articulated credit\*\*\*  Award credit for prior learning/military experience/work experience\*\*\*  Cover fees for industry-recognized credential assessments\*  Cover fees for career and technical student organization (CTSO) activities\*  Provide financial aid for learners from low-income families that cover tuition, equipment, fees, etc. |
| *Tangible barriers* | Provide integrated learner services including healthcare, mental health services, meals/food pantry, child care, academic services, etc.\*\*  Provide case management/a single point of entry to nonacademic support services\*  Provide transportation to the CTE program and/or work-based learning site\* |
| **INSTRUCTION:** The barriers to teaching and learning in the CTE classroom such as lack of accommodations for learners with disabilities, bias in the curriculum, or insufficient academic preparation prior to entering the CTE program. | |
| *Lack of relevant, engaging hands-on and work-based learning experiences* | Provide CTSOs that build technical, employability and leadership skills through competitive events, service learning and other activities\*\*\*  Provide work-based learning scaffolded by employability skills training and mentoring/coaching, among other support services\*\*\*  Provide virtual/simulated learning when real-world learning is not safe, legal or accessible\*\*\*  Teach soft/employability skills \*  Provide early career exploration opportunities to give learners the change to “try on” careers and develop their own occupational identity\*  Provide professional development for educators and industry partners to maximize these experiences  Expand access to paid work-based learning opportunities so learners who need to support their families can participate |
| *Bias in instruction/curriculum* | Teach self-efficacy/self-determination and a growth mindset\*\*\*  Provide professional development on topics related to bias in instruction/ curriculum\*\*\*  Implement Universal Design for Learning, an instructional approach that draws on a variety of teaching methods to ensure equal opportunities to learn\*\*  Use culturally responsive curriculum\*  Employ microaffirmations through active listening, recognizing and validating experiences, and affirming emotional reactions \*  Be sensitive to logos and imagery that perpetuate stereotypes\* |
| *Barriers to learner progress* | Implement bridge/remediation programs, often through contextualized academic-CTE curriculum and instruction\*\*\*  Provide accommodations for learners with disabilities and English learners\*\*  Implement peer tutoring\*\*  Include CTE representatives on Individualized Education Program/504 teams\*  Create space for peer affinity groups so that learners of similar identities can receive support and fellowship |
| **PEOPLE:** Includes barriers related to staffing – such as insufficient school counselors or career advisers and shortages of qualified teachers and faculty – and/or lack of representational diversity in the CTE teacher workforce and among industry partners. | |
| *Lack of diversity in the CTE educator workforce* | Recruit diverse instructors through minority-serving institutions and affinity groups, among other methods\*\*\*  Develop “grow your own” programs in the Education and Training Career Cluster®\*  Develop more inclusive pipelines into leadership and administration |
| *Lack of diversity among industry partners* | Recruit diverse industry partners through affinity business groups, among other methods |

## Selecting Actionable Strategies

Now that you’ve explored some of the research on closing opportunity gaps in education – and in CTE specifically – it’s time to start thinking about which strategies you would like to implement yourself. It’s important to refer back to your data and the root causes you identified in the fishbone exercise earlier to identify strategies that will make the most sense in your community. Consider the following questions:

* What stands out to you?
* Are there any strategies from the report or the workbook that you’re already trying? How effective are they?
* Are there any other ideas that aren’t included on this list?

|  |  |
| --- | --- |
| **List any evidence-based strategies that can help address this opportunity gap** | |
| *It is helpful to look to other examples of schools, districts and institutions for evidence of effective practices. What are others doing to address similar opportunity gaps? What lessons have they learned? If possible, try to find evidence of success from external evaluators or researchers.* | |
| Strategy | Evidence |
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|  |  |

# Section 7: Action Planning for Equity

To develop your equity action plan for CTE, start with your goals. What do you hope to achieve? When setting actionable goals, it is important to be specific, including details about when the goal will be achieved, how you will measure success, etc.

### Describe Three Goals for Equity in CTE

|  |  |  |  |
| --- | --- | --- | --- |
| Goal | Who is accountable? | When will this goal be accomplished? | How will you measure success? |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |

Some goals may be outside of your control or may require partnership with other individuals, organizations or institutions in your community. That is perfectly fine. Setting a specific goal will help you clarify what you want to achieve, and then you can start to map out how you plan to get there. Use the tables below to plan out how you will achieve these goals.

### What Additional Information Is Needed to Achieve these Goals?

|  |  |
| --- | --- |
| **What Do You Need to Know?** | **How Will You Get this Information?** |
|  |  |
|  |  |
|  |  |
|  |  |

### Who Needs to Be Involved to Make Sure Implementation is Successful?

*Think about who else needs to be involved to support implementation of this strategy. Who will help with implementation? Who just needs to be informed?*

|  |  |  |
| --- | --- | --- |
| **Name** | **Office/Group/Organization** | **Role** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

### What Resources Are Needed?

Think about: funding, staffing, professional development, partnerships.

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| --- | --- |
| **Resource** | **How Will You Get It?** |
|  |  |
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|  |  |

What Actions Will You Take to Achieve These Goals?

|  |
| --- |
| **Action Steps** |
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|  |

### What Action Steps Can Be Taken Collectively (by the State, District, College, etc.) to Achieve These Goals?

|  |
| --- |
| **Action Steps** |
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|  |
|  |
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|  |

1. <https://careertech.org/career-technical-education-equity-statement> [↑](#endnote-ref-2)
2. <https://nonprofitoregon.org/sites/default/files/NAO-Equity-Lens-Guide-2019.pdf> [↑](#endnote-ref-3)
3. <https://www.shorter-goodenconsulting.com/> [↑](#endnote-ref-4)
4. <http://kirwaninstitute.osu.edu/research/understanding-implicit-bias/> [↑](#endnote-ref-5)
5. <https://nonprofitoregon.org/sites/default/files/NAO-Equity-Lens-Guide-2019.pdf> [↑](#endnote-ref-6)
6. <http://ccsd.net/resources/aarsi-school-improvement/pdf/planning/school-improvement-planning-basics-root-cause-analysis.pdf> [↑](#endnote-ref-7)
7. <http://results4america.org/wp-content/uploads/2016/11/ESSA-evidence-provisions-explainer-7.22.16-Update.pdf> [↑](#footnote-ref-2)